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UPA-01220

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A multiple-input multiple-output first-in first-out buffer structure, comprising:

a command number generator generating a command order number for each command entering said buffer structure;

a plurality of single-input single-output buffers each having a capacity of buffering multiple commands and storing each incoming command with an associated command order number; and

a command number comparator comparing the command order number of an outgoing command at each single-input single-output buffer and determining which command to output;

wherein an incoming command is divided into a plurality of subcommands, each subcommand of a same command is assigned with a same command order number and a last subcommand within a same command is tagged with an end of transaction indicator.

2. (Original) The multiple-input multiple-output first-in first-out buffer structure as claimed in claim 1, wherein said command number generator has a cyclic counter for generating a command order number that is incremented by 1 when a command enters said buffer structure, and said command number comparator has a cyclic counter for generating a comparison value that is incremented by 1 when a command leaves said buffer structure.

3. (Original) The multiple-input multiple-output first-in first-out buffer structure as

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claimed in claim 1, wherein the two cyclic counters have an identical period which is greater or equal to the maximum number of commands that can be buffered in said buffer structure.

4. (Cancelled).

5. (Currently Amended) [[The]] A multiple-input multiple-output first-in first-out buffer structure as claimed in claim 1, comprising:

a command number generator generating a command order number for each command entering said buffer structure;

a plurality of single-input single-output buffers each having a capacity of buffering multiple commands and storing each incoming command with an associated command order number; and

a command number comparator comparing the command order number of an outgoing command at each single-input single-output buffer and determining which command to output;

wherein an incoming command is divided into a plurality of subcommands, each subcommand of a same command is assigned with a different command order number.

6. (Currently Amended) A command order maintenance scheme for a posted multiple-input and multiple-output first-in first-out buffer structure and a non-posted multiple-input and multiple-output first-in first-out buffer structure, said command order maintenance scheme comprising:

a pending posted write counter for storing [[the]] a value which is a total number of

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pending posted write commands within said posted buffer structure; and

a plurality of dependency counters each being associated with a command within said non-posted buffer structure, [[the]] a value of the dependency counter of ~~each said~~ an associated command being set to the value of said pending posted write counter when said associated command enters said non-posted buffer structure;

wherein said non-posted buffer structure further comprises a command number generator generating a command order number for each command entering said non-posted buffer structure, a plurality of single-input single-output buffers each having a capacity of buffering multiple commands and storing each incoming command with an associated command order number, and a command number comparator comparing the command order number of an outgoing command at each single-input single-output buffer in said non-posted buffer structure and determining which command to output.

7. (Original) The command order maintenance scheme as claimed in claim 6, wherein said posted buffer structure further comprises a command number generator generating a command order number for each command entering said posted buffer structure, a plurality of single-input single-output buffers each having a capacity of buffering multiple commands and storing each incoming command with an associated command order number, and a command number comparator comparing the command order number of an outgoing command at each single-input single-output buffer in said posted buffer structure and determining which command to output.

8. (Cancelled).

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9. (Original) The command order maintenance scheme as claimed in claim 6, wherein said pending posted write counter is increased by 1 when a posted write command enters said posted buffer structure, and decreased by 1 when a posted write command exits said posted buffer structure.

10. (Original) The command order maintenance scheme as claimed in claim 6, wherein the value of each dependency counter in said non-posted buffer structure is decreased by 1 if the value is greater than 0 when a posted write command exits said posted buffer structure.

11. (Original) The command order maintenance scheme as claimed in claim 10, wherein a command in said non-posted buffer structure is ready to exit if the value of its associated dependency counter becomes 0.

12. (Currently Amended) The command order maintenance scheme as claimed in claim 6, wherein a long posted write command is divided into a plurality of basic write commands with [[its]] a last basic write command being tagged with an end of transaction indicator, and said pending posted write counter is increased by 1 only when the last basic write command of a long posted write command enters said posted buffer structure and is decreased by 1 only when the last basic write command of a long posted write command exits said posted buffer structure.

13. (New) A command order maintenance scheme for a posted multiple-input and multiple-output first-in first-out buffer structure and a non-posted multiple-input and multiple-output first-in first-out buffer structure, said command order maintenance

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scheme comprising:

a pending posted write counter for storing a value which is a total number of pending

posted write commands within said posted buffer structure; and

a plurality of dependency counters each being associated with a command within said

non-posted buffer structure, a value of the dependency counter of an associated

command being set to the value of said pending posted write counter when said

associated command enters said non-posted buffer structure;

wherein the value of each dependency counter in said non-posted buffer structure is

decreased by 1 if the value is greater than 0 when a posted write command exits said

posted buffer structure.

14. (New) The command order maintenance scheme as claimed in claim 13, wherein a

command in said non-posted buffer structure is ready to exit if the value of its

associated dependency counter becomes 0.

15. (New) A command order maintenance scheme for a posted multiple-input and

multiple-output first-in first-out buffer structure and a non-posted multiple-input and

multiple-output first-in first-out buffer structure, said command order maintenance

scheme comprising:

a pending posted write counter for storing a value which is a total number of pending

posted write commands within said posted buffer structure; and

a plurality of dependency counters each being associated with a command within said

non-posted buffer structure, a value of the dependency counter of an associated

command being set to the value of said pending posted write counter when said

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associated command enters said non-posted buffer structure;

wherein a long posted write command is divided into a plurality of basic write

commands with a last basic write command being tagged with an end of transaction

indicator, and said pending posted write counter is increased by 1 only when the last

basic write command of a long posted write command enters said posted buffer

structure and is decreased by 1 only when the last basic write command of a long

posted write command exits said posted buffer structure.

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